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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/005,135	11/30/2001	Phillip M. Adams	2456.2.9	8062

7590	03/26/2004

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EXAMINER
CHEN, ALAN S

ART UNIT	PAPER NUMBER
2182	7

DATE MAILED: 03/26/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM
THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed
  after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
  Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any
  earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *10 February 2004*.
2a)☐ This action is **FINAL**.   2b)☒ This action is non-final.
3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is
closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-24* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-24* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *11/30/2001* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All   b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage
application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
     Paper No(s)/Mail Date _____.

4) ☐ Interview Summary (PTO-413)
     Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

1.   The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the

basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2.   Claims 1-24 rejected under 35 U.S.C. 102(b) as being anticipated by No. US005450546A

to Krakirian.

3.   As per claims 1, 13, 22 and 24, Krakirian discloses an apparatus, method and article (Fig.

2) configured to process data communicated with devices of both synchronous and asynchronous

types (SCSI and Disk devices attached at Fig. 2, element 235 and 275 can be synchronous or

asynchronous), comprising: a processor (Fig. 2, element 210) configured to process data

communicated with devices of both synchronous and asynchronous types (as shown with bus

interface, interfacing both disk control and host interface to SCSI bus); and a controller

configured to control data exchange between devices (Fig. 2, element 230 and 270), the

controller including a buffer (Fig. 2, element 220), having a capacity of bytes and configured to

temporarily store the data exchanged, and a memory device connected to the processor to store

data structures comprising executables (Fig. 1, element 160 and Column 1, lines 44-62, note the

invention of Krakirian further reduces the need for the processor, but still requires it execute

commands to the controllers, hence the bus lines to the controller from the processor in Fig. 2),

the executables comprising a driver configured to control operation of the controller (inherent

that myriad of commands are executed to read, write, check, etc., of the peripheral drives) and

an error avoidance module (Fig. 2, element 240) configured to be invoked by the driver to

compare the capacity to a count of bytes (Column 3, lines 55 thru Column 4, lines 19 and

Column 8, lines 13-39), and force an error condition based on count (Column 3, lines 62-Column

4, lines 2).

4.   As per claims 2 and 14, Krakirian discloses claims 1 and 13, wherein the error condition

is forced if the value of the count is at least as large as the capacity (for a buffer overrun,

Krakirian signals a error if count is greater than amount of space (Column 3, lines 60-69).

5.   As per claims 3 and 15, Krakirian discloses claims 1 and 13, wherein the error condition

is forced if the value of the count is at least as large as the capacity of the buffer added to a value

corresponding to bytes that have been transferred both into and out of the buffer during a transfer

operation between the buffer and the processor (note here that this is equivalent to claims 2 and

14 due the condition where the processor issues the same amount of reads and writes into the

buffer, so that the net count solely from transactions of the processor is zero. This equates to the

count being as large as the capacity of the buffer).

6.   As per claims 4 and 23, Krakirian discloses claim 1, wherein the driver further comprises

an initialization module configured to enable the error avoidance module (Column 6, lines 66 –

Column 7, lines 15 and Fig. 2, element 260).

As per claims 5-11 and 16-20, Krakirian discloses claims 4 and 13, wherein the

initialization enables the Fig. 2, element 240 so that it detects when the buffer is full or empty,

e.g., approached it limit, both a low and a high limit corresponding to empty and full from read

and write operations out of the buffer (Fig. 2).

As per claims 12 and 21, Krakirian discloses claims 11 and 20, wherein the buffer is

selected from the group consisting of a register (Fig. 2, element 258), a FIFO (Fig. 2, element

271), and a content-addressable memory (Fig. 2, element 220).

Conclusion

7.   The prior art made of record and not relied upon is considered pertinent to applicant's

disclosure.

The following patents are cited to further show the state of the art with respect to

handling buffer overruns and underruns:

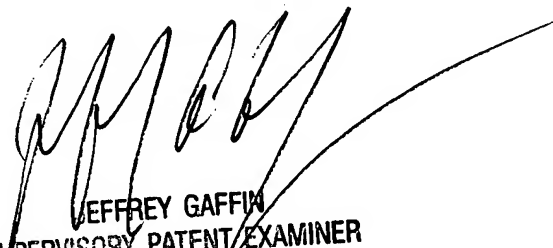U.S. Pat. No. 4,040,027 to van Es et al.

U.S. Pat. No. 5,179,663 to Iimura

8.   Any inquiry concerning this communication or earlier communications from the

examiner should be directed to Alan S Chen whose telephone number is 703-605-0708. The

examiner can normally be reached on M-F 8:30am - 5:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's

supervisor, Jeffrey A Gaffin can be reached on 703-308-3301. The fax phone number for the

organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent

Application Information Retrieval (PAIR) system. Status information for published applications

may be obtained from either Private PAIR or Public PAIR. Status information for unpublished

applications is available through Private PAIR only. For more information about the PAIR

system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR

system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

ASC
3/19/2004

JEFFREY GAFFIN
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2100